We claim:

- An apparatus for generating high intensity X-rays comprising:
 a source for generating a focused beam of electrons; and
 at least one X-ray anode in the form of the interior surface of a metallic tube.
- 2. The apparatus of claim 1, wherein the at least one X-ray anode comprises a plurality of X-ray anodes.
- 3. The apparatus of claim 1, wherein the at least one X-ray anode comprises at least one first X-ray anode and at least one second X-ray anode, the metallic tube of the first X-ray anode comprising a first material, and the metallic tube of the second X-ray anode comprising a second material, the second material being different from the first material.
- 4. The apparatus of claim 3, further comprising an electron beam deflector adapted to selectively deflect the focused beam of electrons to one of the first X-ray anode and the second X-ray anode.
- 5. The apparatus of claim 4, wherein the at least one first X-ray anode comprises a plurality of first X-ray anodes and the at least one second X-ray anode comprises a plurality of second X-ray anodes.
- 6. The apparatus as in claim 5, wherein the electron beam deflector is adapted to deflect the electron beam to (i) one of the plurality of first X-ray anodes and the plurality of second X-ray anodes exclusively and (ii) at least one first X-ray anode and at least one second X-ray anode simultaneously.

- 7. The apparatus as in claim 1, further comprising a variable voltage power supply for powering the source.
- 8. The apparatus of claim 1, wherein the metallic tube comprises one of Tungsten and Molybdenum.
- 9. The apparatus of claim 1, wherein a heat-conducting layer overlies the metallic tube.
- 10. The apparatus of claim 9, wherein the heat-conducting layer comprises one of gold, silver and copper.
- 11. The apparatus of claim 1 wherein an X-ray radiation-absorbing layer overlies the metallic tube.
- 12. The apparatus of claim 11, wherein the X-ray radiation-absorbing layer comprises Beryllium.
- 13. The apparatus of claim 1, wherein an end of the metallic tube through which the X-rays exit is sealed by a thin layer of metallic material of essentially the same composition as the material comprising the metallic tube.
- 14. A guide tube anode assembly for use in an X-ray generation device, the guide tube anode assembly comprising:
 - a metallic interior tubular layer having a thickness of between 10-1000 atomic layers; and
 - an X-ray radiation absorbing tubular layer at least partially overlying the metallic interior tubular layer.
- 15. The guide tube anode assembly of claim 14, further comprising a heat conducting tubular layer contained between the metallic interior tubular layer and the X-ray radiation absorbing tubular layer.

- 16. The guide tube anode assembly of claim 14, wherein the metallic interior tubular layer has a thickness of between about 10-18 atomic layers.
- 17. The guide tube anode assembly of claim 14, further comprising a thin metal layer covering at least one end of the guide tube anode assembly, the thin metal layer comprising essentially the same material as the metallic interior tubular layer.
- 18. A method of generating a highly directional beam of X-ray radiation, the method comprising:

directing a high energy electron beam from an electron beam generator into first ends of one or more tubular anodes, each tubular anode comprising a cylindrical metal tube having a thin wall thickness;

creating X-ray radiation as a result of grazing collisions with the interior surface of each metal tube of the one or more tubular anodes;

directing a beam of X-ray radiation having essentially a characteristic line spectrum related to a specific metal utilized in the metal tubes of the one or more tubular anodes down the metal tubes and out of second ends of the tubular anodes.

- 19. The method of claim 18, wherein the one or more tubular anodes comprises a plurality of tubular anodes, further comprising deflecting the high-energy electron beam into a fractional portion of the plurality of tubular anodes.
- 20. The method of claim 19, wherein the plurality of tubular anodes comprises at least first and second arrays of tubular anodes, the first array including only metal tubes comprising a first metal, and the second array including only metal tubes of a second metal, the first and second metals being different from each other, further comprising selectively deflecting the high energy electron beam between the first and second arrays.